

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-13. (Canceled)

14. (New) A fuel injector for an internal combustion engine, comprising
an injector body (2), which has at least one first injection orifice (3) and at least one second injection orifice (4),
a first nozzle needle (7) that is embodied as a hollow needle and is guided in a first needle guide (6) of the injector body (2),
a second nozzle needle (9) disposed coaxial to the first nozzle needle (7),
the first nozzle needle (7) being driven to control the injection of fuel through the at least one first injection orifice (3) and the second nozzle needle (9) being driven to control the injection of fuel through the at least one second injection orifice (4),
a first catch contour (19) embodied on the first nozzle needle (7) and
a second catch contour (20) embodied on the second nozzle needle (9), whereby once the first nozzle needle (7) opens a predetermined preliminary stroke (24), the first catch contour (19) cooperates with the second catch contour (20) and when an opening movement of the first nozzle needle (7) exceeds the preliminary stroke (24), carries the second nozzle needle (9) along with it.

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

15. **(New)** The fuel injector according to claim 14, further comprising a first leakage chamber (45) and wherein the catch contours (19, 20) cooperate with each other in the first leakage chamber (45).

16. **(New)** The fuel injector according to claim 14, wherein the second nozzle needle (9) does not have a pressure shoulder.

17. **(New)** The fuel injector according to claim 15, wherein the second nozzle needle (9) does not have a pressure shoulder.

18. **(New)** The fuel injector according to claim 14, wherein further comprising drive means driving the first nozzle (7), the drive means including

- a compensation chamber (30)
- a first control chamber (34)
- a second control chamber (36) communicating with the first control chamber (34)
- a booster piston (28) having a first surface (29) in the compensator chamber (30) that acts in the closing direction when subjected to pressure and a second surface (33) that acts in the opening direction when subjected to pressure,
- a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4), the compensation chamber (30) communicating with the supply line (25), and
- an actuating piston (38) having a third surface (37) in the second control chamber (36).

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

19. (New) The fuel injector according to claim 15, wherein further comprising drive means driving the first nozzle (7), the drive means including

a compensation chamber (30)

a first control chamber (34)

a second control chamber (36) communicating with the first control chamber (34)

a booster piston (28) having a first surface (29) in the compensator chamber (30) that acts in the closing direction when subjected to pressure and a second surface (33) that acts in the opening direction when subjected to pressure,

a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4),
the compensation chamber (30) communicating with the supply line (25), and
an actuating piston (38) having a third surface (37) in the second control chamber
(36).

20. (New) The fuel injector according to claim 18, wherein

the booster piston (28) and the first needle (7) constitute a unit that is driven into a shared stroke motion, and wherein

the first catch contour (19) is provided on the booster piston (28).

21. (New) The fuel injector according to claim 14, further comprising means driving the nozzle needle (7), including a booster piston (51) having a first surface (52) in a first booster chamber (53), the first surface (52) that acting in the closing direction when subjected to pressure,

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

a second leakage chamber (55), and
a first spring (54) in the second leakage chamber (55) and pressing the booster piston
in the opening direction.

22. **(New)** The fuel injector according to claim 21, wherein the booster piston (51),
comprising at least one bore (57) via which the second leakage chamber (55) communicates
with the first leakage chamber (45).

23. **(New)** The fuel injector according to claim 21, further comprising
a control piston (61) having a forward stroke surface (62) in a control chamber (63)
and the return stroke surface (60) in a second booster chamber (59),
the control chamber (63) communicating with a supply line (25) that supplies highly
pressurized fuel to the injection orifices (3, 4),
the return stroke surface (60) and the forward stroke surface (62) being disposed at
opposite ends of the control piston (61),
the control piston (61) separating the control chamber (63) from the second booster
chamber (59), and
the first booster chamber (53) communicating with the second booster chamber (59).

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

24. (New) The fuel injector according to claim 22, further comprising

a control piston (61) having a forward stroke surface (62) in a control chamber (63)

and the return stroke surface (60) in a second booster chamber (59),

the control chamber (63) communicating with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4),

the return stroke surface (60) and the forward stroke surface (62) being disposed at opposite ends of the control piston (61),

the control piston (61) separating the control chamber (63) from the second booster chamber (59), and

the first booster chamber (53) communicating with the second booster chamber (59).

25. (New) The fuel injector according to claim 21, wherein the control chamber (63) communicates with the second booster chamber (59) via a throttle path (66).

26. (New) The fuel injector according to claim 22, wherein the control chamber (63) communicates with the second booster chamber (59) via a throttle path (66).

27. (New) The fuel injector according to claim 23, wherein the control chamber (63) communicates with the second booster chamber (59) via a throttle path (66).

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

28. (New) A fuel injector according to claim 14, further comprising a booster piston (68) for driving the first nozzle needle (7), the booster piston (68) having a first surface (69) in a control chamber (70), the first surface (69) acting in the closing direction when subjected to pressure, and

a control piston (72) having a control surface (75) in the control chamber (70) and is driven by an actuator (74) to enlarge the volume in the control chamber (70).

29. (New) The fuel injector according to claim 28, wherein the control piston (72) is guided coaxially inside the booster piston (68).

30. (New) The fuel injector according to claim 28, wherein the control chamber (70) is supplied from a filling chamber (78) that communicates with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4), and wherein the control chamber (70) communicates with the filling chamber (78) via a throttle path (81).

31. (New) The fuel injector according to claim 29, wherein the control chamber (70) is supplied from a filling chamber (78) that communicates with a supply line (25) that supplies highly pressurized fuel to the injection orifices (3, 4), and wherein the control chamber (70) communicates with the filling chamber (78) via a throttle path (81).

Applicant: Friedrich BOECKING
Docket No. R.304748
Preliminary Amdt.

32. **(New)** The fuel injector according to claim 28, wherein the second nozzle needle (9) is prestressed in the closing direction by a second spring (50), one end of which rests against the second nozzle needle (9) the other end of which rests against a supporting end (85) of the control piston (72) oriented away from the control surface (75).

33. **(New)** The fuel injector according to claim 30, wherein the second nozzle needle (9) is prestressed in the closing direction by a second spring (50), one end of which rests against the second nozzle needle (9) the other end of which rests against a supporting end (85) of the control piston (72) oriented away from the control surface (75).